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ABSTRACT

A review of craft apprentice training in Great Britain has been carried out by the training board, based on the reports of its regional training officers, on discussions with electricity board training staff, and on the comments received from the industry through the concordat procedure. As a result of the review, certain specific matters were identified on which it was evident some further guidance in the implementation of Recommendation 1 would be welcomed by electricity boards. These arose from experience of the application of Recommendation 1, and the changes proposed can be carried out within its general framework. These are: (1) the provision of a common first-year program for distribution trades, (2) the further development of related-trades training, (3) the need for the flexibility in the implementation of on-job training programs, (4) the effect of changes in the pattern of recruitment, (5) the effect of developments in the field of further education, and (6) the implications of experience gained from use of first and third year test. These six changes are discussed in detail. A common first year training program for distribution craft apprentices takes up the second half of the document. The intended training period is approximately 36 weeks. (Author/DS)

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Electricity Supply Industry Training Board

**Guide Notes
on the implementation of
Recommendation 1:**

Training of Craft Apprentices

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guide notes on the implementation of recommendation 1: training of craft apprentices

introduction

1. A review of craft apprentice training has been carried out by the Training Board, based on the reports of its Regional Training Officers, on discussions with electricity board training staff and on the comments received from the industry through the concordat procedure.

2. As a result of the review, certain specific matters were identified on which it was evident some further guidance in the implementation of Recommendation 1 would be welcomed by electricity boards. These arose from experience of the application of Recommendation 1, and the changes proposed can be carried out within its general framework. These are:

- i) The provision of a common first-year programme for distribution trades.
- ii) The further development of related-trades training.
- iii) The need for flexibility in the implementation of on-job training programmes.
- iv) The effect of changes in the pattern of recruitment.
- v) The effect of developments in the field of further education.
- vi) The implications of experience gained from use of first- and third-year tests.

3. These matters fall broadly into two categories: those that affect the recommendation itself and those that only affect the training programmes.

**a common
programme
of first-year
training for
distribution
craft
apprentices**

4. Two sets of training programmes are issued with Recommendation 1 : one set deals with apprentices in generation, the other with those in distribution. The following refers only to the distribution programmes.

5. At the time of the issue of Recommendation 1 electricity boards were invited to work out for themselves the common elements of the first year training in the different trades. After some years of operation of the training scheme, however, the Training Board, supported by views expressed by electricity boards, re-examined the programmes to establish these common elements of the separate trades. It was found that these elements were substantial and a common first-year programme of training has therefore been prepared for distribution craft apprentices, the major part of which will normally be implemented in a training centre. During the time that is additionally available in the first year for on-job training, however, apprentices should be attached to craftsmen. Electricity boards may supplement this basic programme in order to meet any additional specific requirements of their own. This programme replaces the first-year programmes at present attached to Recommendation 1. Electricity boards will in consequence need to re-examine the formal training programmes for the second and subsequent years of training in order to ensure that they take into account the changes arising from the common first-year programme.

6. The common first-year training programme itself is attached as an appendix.

**further
development
of
related-trades
training**

7. In the introduction to each programme attached to Recommendation 1 one of the aims of apprenticeship is stated as 'to familiarise the apprentice with some of the work of other trades with which he may come into contact'. This reference to related-trades training is focused at those points where the various trades converge.

8. Since the recommendation was first issued there have been changes in the organisation of work in the boards, etc., which have affected the way in which different craftsmen do their work.

9. Electricity boards should identify, in addition to the particular apprentices' own craft skills, those skills of other trades which closely relate to their own and overlap with them. These aspects of related trades should then be incorporated into the training programme as an addition to those contained in the new common first-year training programmes.

10. Some examples of related -trades training which might be included are :

- a) *In the electrical fitters' (distribution) second- and third-year programmes*
 - i) Cable terminations on 11kV and 33kV switchgear and transformers.
 - ii) MV cable terminations on distribution boards and pillars (heat shrinkable or conventional) and in cut-outs on dead systems.
 - iii) Overhead line connections to outdoor primary substation equipment.
- b) *In the electricians' second- and third-year programmes*
 - i) Rising mains installations using combined neutral and earth cables.
 - ii) Service terminations, including fixing and changing meters, changing insulated cut-outs, fitting earth terminals and changing meter boards.
 - iii) Electrical wiring installations in substations.
 - iv) Relay panels in substations.
 - v) Multi-core control installations and communication cables.

- c) *In the jointers' second- and third-year programmes*
 - i) Substation plant, including extensible and non-extensible type switchgear up to and including 33kV.
 - ii) Earthing installations at distribution substations.
 - iii) MV/LV under eaves wiring.
 - iv) Cable terminations and connections to overhead lines where appropriate.
 - v) Overhead line repair and maintenance including fault conditions.
 - vi) Multi-core and pilot cable installations and terminations.
- d) *In the linesmen's second- and third-year programmes*
 - i) Plant and equipment in appropriate primary substations.
 - ii) Earthing and bonding in primary substations.
 - iii) Cable terminations on poles.
 - iv) Cable installations associated with overhead lines.

11. It is proposed that the Training Board's officers shall compile a list of examples of related-trades training identified in electricity boards, and circulate this for information.

**provision
of greater
flexibility
in relation
to on-job
training
programmes**

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12. There is evidence that electricity boards have experienced certain difficulties in implementing the training programmes with respect to on-job training, viz :
- a) The time allocation prescribed in the programme for an item of training was sometimes unattainable, due to insufficient activity in that area of work to ensure adequate coverage of the training recommended.
 - b) The sequence laid down in the Training Board's programmes was sometimes difficult for electricity boards to maintain if taken too literally, and in any case had no merit over alternative sequences developed in the light of experience.
13. Electricity boards have represented that they would find the programmes easier to implement if they were to be expressed in less rigid terms. Current developments in electricity boards' plans for post-first-year training which involve a higher proportion of formal training than originally could be provided will also have an effect upon the overall training of craft apprentices.

14. Electricity boards are therefore advised that they have latitude in respect of the sequence of training, and the duration of individual training items, in order that they can take maximum advantage of training opportunities when they arise, such as the planned shut-down of plant. Programmes of training may be integrated in such a way as to permit the grouping of related items with wider time limits than those at present detailed in the respective programmes of training.

15. Where Recommendation 1 requires training on prescribed items of plant, or on work techniques not used locally, electricity boards are advised that such training should be a matter for them to determine in the light of operational requirements and of the training and future work needs of apprentices.

16. Electricity boards should also take into account in the context of more flexible programmes the effect of the new common first-year programme on subsequent years of training.

**effect
of changes
in the
pattern of
recruitment**

17. Since 1965, when Recommendation 1 was under consideration, there has been a marked change in the numbers of apprentices being recruited in some categories. In the trades of electrical fitter (distribution), linesman, joiner and meter mechanic, the numbers under training are such that some electricity boards face difficulties in the economic provision of formal facilities.

18. The problem of small numbers of apprentice meter mechanics is not a new one and electricity boards have tackled this problem in different ways. Some electricity boards have provided training bays in their meter test stations for the formal and on-job training of their own apprentice meter mechanics, whilst others have shared facilities with neighbouring boards in the interest of reasonable numbers. With regard to electrical fitters, some boards have utilised the formal facilities of other electricity boards.

19. Measures such as the introduction of a common first-year programme should help to alleviate the problem, as should the more flexible presentation of the Training Board's programmes, in that electricity boards will be more able to form viable groups for formal training if they are able to select apprentices from different stages of training.

20. The Training Board advises therefore that the formal training facilities required by craft apprentices after the first year of training may be provided either in a formal training centre or by suitable alternative means, e.g. in a training bay attached to a major workshop, under the control of a person who is trained in instructional techniques. Where electricity boards are unable to provide facilities of their own for the formal training of certain categories of craft apprentices they should try and arrange to share the facilities of other electricity boards.

**effect of
developments
in the field
of further
education**

21. Recommendation 1 states that craft apprentices should normally follow the City and Guilds craft courses and in the majority of cases these courses have effectively met the educational needs of craft apprentices.

22. It is now generally accepted that courses of further education for young trainees should not only attempt to serve the needs of their industrial training, but should also match their ability and rate of personal development.

23. Thus whilst first year craft apprentices will normally be expected to study CGLI Course No. 200—Basic Engineering Craft Studies, Part I, consultation between electricity boards and colleges is necessary to ascertain whether other further education courses are better suited to the development of an individual trainee.

24. Whilst there have been no particular problems associated with the initial part of City and Guilds craft courses since the issue of the recommendation nevertheless certain problems have arisen in connection with later stages of study. Two major issues are:

- a) The non-availability of certain Part II Craft Studies options at technical colleges used by electricity boards.
- b) The choice of further education for fourth year apprentices.

a) Part II Craft Studies options

25. Some electricity boards have encountered problems in relation to some Part II options; mainly due to the pattern of recruitment, particularly with regard to electricians, fitters, jointers and linesmen apprentices in those electricity boards concerned with distribution. The Part II options concerned are Electricity Supply (Substation Plant) and (Power Lines and Cables), City and Guilds Course No. 231 (old No. 511). Electricity boards are trying to meet the situation by reducing the number of colleges they use or by using specific colleges for particular options.

26. No problems of this nature have been reported from generation boards as generally recruitment in the trades concerned has continued at a level which has enabled viable numbers to be maintained in technical colleges. Neither has there been any difficulty reported with respect to educational courses for electricians.

27. In order to overcome the problem which exists in relation to Part II options the Training Board advises electricity boards therefore that if they are unable to arrange for their apprentices to study for the Part II option relevant to their craft, they should seek in co-operation with neighbouring boards, and through the medium of the appropriate Regional Advisory Council for Further Education, to establish Part II courses on a regional basis or seek to establish national courses at Part II level through the aegis of the Electricity Council, centralised at selected colleges.

b) Further education in the fourth year

28. There are three alternative routes of further education open to craft apprentices in their fourth year of training if they have successfully completed the educational courses in their first three years. These are:

- i) Additional Part II options relevant to their trade;
- ii) Part III courses, which can be devised to meet the industry's needs by co-operation between electricity boards and the appropriate Regional Advisory Council;
- iii) Exceptionally, for those students who have been continuously successful in further education, electricity boards may wish to provide them with educational courses either at, or leading to, technician level.

29. In determining what route individual apprentices should follow, electricity boards should assess the individual's ability to cope with the courses open to him and the relevance of the courses to his future employment.

**implications
of experience
gained
from use of
first and third
year tests**

30. The references in Recommendation 1 : "Training of Craft Apprentices" to tests were general and were not based on any well formulated body of experience. Considerable progress has more recently been made in testing methods generally and in particular electricity boards have gained further experience for testing both individually and in co-operating in the Training Board's research project on the validation of the selection tests used in the industry.

31. In establishing systematic testing arrangements, the main considerations that have to be taken into account are :

- a) The aims of testing
- b) The frequency of testing
- c) The use of national or individual electricity board tests
- d) Types of test exercises
- e) Facilities, staff and administration
- f) The assessment of test performance

a) The aims of testing

32. Testing is an aspect of the control of the quality of training, and the need to check that craft apprentices acquire through training a satisfactory standard of skill is now generally accepted. Testing also aims to reveal individual deficiencies for which remedial training should be provided.

b) The frequency of testing

:

33. The present recommendation makes provision for formal tests at the end of the first and third years of training. However virtually the whole of first year training is carried out in a centre, off the job. The nature of this training is such that it lends itself to phased tests; that is, tests at intervals, during which additional training has been given and during which the practical work carried out by apprentices is assessed by the instructional staff. This almost continuous assessment is sound and diminishes the need for the end of first year tests, which are not essential provided that phased tests are carried out and that there is progression from the initial simple test exercises to more difficult and comprehensive test exercises during the formal course.

34. The existing programmes for generation apprentices and apprentice electricians treat the second- and third-year syllabus as one entity. The combination of phased testing, based on the components of training actually carried out in the second and in the third year is highly desirable, and is particularly appropriate in view of the changes previously referred to towards a more flexible planning of second- and third-year training programmes.

35. More comprehensive tests are however recommended at the end of the third year, or the commencement of the fourth year, which will allow sufficient time for corrective action to be taken when deficiencies are revealed, but which will also indicate the general standard of craftsmanship reached at this stage.

c) The use of national or individual electricity board tests

36. The establishment of phased tests during the first, second and third years of training can best be done by electricity boards themselves, in line with the training which they provide: the Training Board is however examining the possibility of providing examples of typical tests. The Board's Regional Training Officers are available also to advise electricity boards in this connection.

37. The industry already has experience of more formal national tests at the end of the third year, and this has ensured a more uniform standard of training than would have been achieved if tests had been devised locally. Coming as they did at the end of the third year or early in the fourth year, they also provided an opportunity for such further training as was required to be given. These tests are already established in respect of distribution boards and are in the course of production for generation boards.

d) Types of test exercises

38. Of the three possible types of tests i.e. oral, written and practical, the main difficulty with oral tests is the problem of reliably presenting and scoring the items. Oral items are therefore not recommended, although regular interviewing has value as an aid in checking progress.

39. Written tests are widely used and the carefully constructed multiple-choice objective type is probably the most valid. It is recommended that written tests be used for those aspects of craft training that cannot be readily covered by means of practical tests.

40. Phased tests based on typical exercises present no great problem, but in devising and carrying out comprehensive practical end-tests, it is recognised that they check training over a period which includes both formal and on-job components. Simple spot checks could be conducted easily and quickly but they will not provide sufficient indication as to whether an apprentice was really competent to cope with the work for which he had been trained. Long tests, including comparatively large and complex installations, maintenance and repairs, would certainly tell whether or not the apprentice is competent but the practical difficulties in providing such tests for all apprentices are great. Shorter, more practical end tests lasting altogether about one or two days are therefore recommended for the end of third-year or early fourth-year assessment.

41. Experience has shown that the type of tests devised and carried out for the selection test validation project are soundly based, are practicable, and provide some guidance for further development and the Training Board proposes therefore to provide tests along these lines after the validation project has been concluded.

e) Facilities, staff and administration

42. It is recognised that the production priorities at power stations and districts, where the apprentices receive most of their training, prohibit large scale testing. Plant and formal training centres, or technical colleges (where formal training is carried out for electricity boards' apprentices) are the most suitable places at which tests can be arranged. The apprentices attend formal training courses at these establishments and their staff are suitable examiners. They have had experience of both phased and end testing, and phased testing is an integral part of first year training courses. The instructional staff have no particular station or district bias and they can ensure a consistent assessment of performance.

43. So far as large scale tests of a practical nature are concerned, testing needs to be adequately planned for. With a large number of apprentices to be tested, it is important to ensure that time is allowed to prepare the place where the tests will be carried out, in addition to the time necessary for the actual tests. In programming the work for a formal training establishment, electricity boards may even find it necessary to set aside a period of time when only large scale testing will be carried out there, but in any case, due regard will need to be given to the loading of the establishment. The need to allow time for validating any new tests should also not be overlooked.

44. Attempts should be made to standardise the administration of tests by means of guides for instructors on administration and marking as well as the instruction to candidates and standard marking sheets. In the case of end of third-year or early fourth-year tests, the Training Board will continue to develop its service in respect of administration guides.

f) Assessment of test performance

45. One of the most important requirements for a practical test is a good marking scheme. Where the activity or exercise being assessed results in a measurable quantity, a degree of uniformity in the marking can be achieved by detailed job breakdown. There are, however, a large number of test exercises where the activity being assessed does not result in a measurable quantity and this is the problem area. Attempts have been made to overcome the problem by 'weighting' certain marks to allow for relative importance but the amount of 'weighting' is always debatable and rarely satisfactory.

46. A satisfactory marking system can be achieved by means of marking sheets containing 'essential' and 'desirable' items in separate sections, which can be marked in a straightforward 'yes' or 'no' manner opposite each individual item. A candidate would be required to carry out correctly all the items in the 'essential' section to pass the test. The candidate who additionally satisfied the examiner on a number of items in the 'desirable' section could be given a higher grade of pass if this is thought necessary.

47. Marking sheets of this type eliminate the need to work out the number of marks required for a pass and remove the possibility of a candidate collecting enough marks to secure a pass without completing the exercise safely or satisfactorily. It is important that these tests reveal the specific training deficiencies which should receive attention. If they do receive attention then the main objects of testing will have been achieved.

**common
first-year training programme
for distribution
craft apprentices**

(Duration of training approximately 36 weeks)

appendix

foreword

1. It is intended that all first-year distribution apprentices should follow this programme.
2. Apprentices will commence the programme either by taking Section I, "Introduction to Mechanical Training" or Section III, "Introduction to Electrical Training". It is not intended that the induction element of these introductory courses should be repeated.
3. Basic mechanical and electrical skills training should precede distribution skills training.
4. Electricity boards should re-examine their post-first-year training arrangements in the light of the introduction of this programme to ensure that the training provided is logically progressive and fully meets the apprentices' training needs.
5. To ensure the co-ordination of education and training, electricity boards should consult with those colleges responsible for the apprentices' further education and jointly plan the instruction for the first year of training. In the planning of courses electricity boards should also consult with their local Regional Advisory Council for Further Education.

i introduction to mechanical training

(Duration—about 2 days)

aims To give an initial induction to the training centre and the electricity supply industry and to emphasise the importance of safe working practices in the workshop.

content Initial induction, including local organisation; domestic arrangements; conditions of service; trade unions in the industry; arrangements for further education.

Introduction to the workshops.

Safe working in the workshop associated with the use of hand, powered hand, and machine tools.

method By demonstrations, talks and films with some practical participation by the apprentices.

ii basic mechanical skills

(Duration—about 11 weeks)

aims To give a practical understanding of and to develop basic skills in workshop processes, concerned with hand, powered hand and machine tools; forging, heat treatment and welding; their applications, limitations and standards of accuracy and quality.

content

<i>Process</i>	<i>Application of skills</i>
Interpretation of drawings, measuring and marking out.	The use of measuring equipment such as the rule, micrometer, calipers and vernier gauge.
The uses of simple hand tools such as the hammer, hacksaw, jigsaw, files, centre punch, scribing block, hand drills, taps, dies, chisels, shears and riveting tools.	Manufacture of useful tools and equipment.
Forging, hardening and tempering of simple hand tools.	Manufacture of useful tools.
Welding of simple joints and steel plate by gas and arc methods.	Joints on steel plate and trunking.
Turning – use of centre lathe.	Turning exercises making useful tools.
Milling.	Exercises on flat surfaces.
Drilling.	Exercises using hand, hand-powered and pillar drills on steel, aluminium, laminates and plastic.
Grinding.	Sharpening of machine drills, cutters, etc. Surface grinding exercises.
The folding, cutting and jointing of sheet metal.	Use of folding machines and guillotines. Exercises involving riveting and soldering.

method

Mostly practical work supported by lectures and demonstrations where practicable. Instructional staff should set tolerance limits for the exercises based on the degree of accuracy required and/or the experience of the trainees undertaking the exercises. Instruction in the principles of some of the skills included in this section will be called for which are not included in the City and Guilds Course No. 200 (old No. 500) Basic Engineering Craft Studies, Part I.

iii introduction to electrical training

(Duration up to 5 days)

aims To give an initial induction to the training centre and the electricity supply industry if not previously covered ; to provide a basic appreciation of electricity, and an understanding of simple circuit diagrams and of the construction of the main types of cables and conductors in use.

content Initial induction including local organisation ; domestic arrangements ; conditions of service ; trade unions in the industry ; arrangements for further education.
Understanding of basic electrical principles, the relationship between current, voltage, resistance and power through practical demonstrations.
Construction of main types of cables and conductors in use in electrical work.
Safety with respect to electrical hazards.

method By demonstrations, talks and films with practical participation by apprentices, in order to ensure that basic principles of electrical theory are clearly understood. To ensure integration of education and training, electricity boards should consult with those colleges responsible for the apprentices' further education and jointly plan the instruction on this topic.

iv basic electrical skills

(Duration about 11 weeks)

aims To give a practical understanding of the circuitry of typical lighting and power systems, to develop skill in their installation, to give a basic knowledge of electrical appliances and to teach the skills necessary to prepare the working location and make good after completion of work on consumers' premises.

Process

Application of skills

The use of hand tools such as pliers, wirecutters, plugging tools and screwdrivers, and powered hand tools ie: portable electrical drills, fixing devices and percussion hammers.

As relevant in those areas listed below.

Stripping, jointing, clipping and terminating cables.

On PVC single, two-core and three-core cables later progressing to m.i.c.c.

Installation of single and two-way lighting circuits, radial and ring power circuits.

Working with PVC cables, firstly on wooden boards, progressing to installation work on breeze, brick or concrete surfaces. Similar exercises using m.i.c.c. at a later stage.

Cutting, bending and screwing conduits for single and two-way lighting circuits and radial and ring power circuits.

Installing conduit systems on breeze, brick and concrete surfaces first using steel conduit, and later progressing to plastic and aluminium conduit, where this type of conduit is used by the electricity board concerned.

Use of flexible cords and cables.

Making connections to electrical appliances and fittings.

Dismantling, rebuilding, testing & repairing domestic appliances.

Stripping and fault finding on domestic appliances such as cookers, fires and irons.

Construction and installation of lighting fittings.

Practical exercises using tungsten and fluorescent lighting fittings.

Testing of conductors, electrical equipment and electrical installations.

Use of continuity and insulating testing equipment, test lamps and polarity checking devices. Testing of earths, use of earth loop impedance testing equipment.

Earthing and bonding.

Making holes in walls, plugging and chasing walls, and making good.

In brick, breeze and other types of walls by different methods. Work to be carried out in association with cable entries, the flush mounting of socket outlets, the running of conduits and conductors. Reinstatement of disturbed surfaces.

Lifting and replacing floor coverings and floor boards, and drilling joists.

The lifting of tongued and grooved floorboards with minimum disturbance and damage, and their replacement under a variety of conditions.

method Mostly practical work augmented by lectures, demonstrations and films. All exercises to be checked for standards of finish and all systems where possible to be checked electrically and tested by the application of power under the instructor's supervision. Instruction on three-phase systems should be deferred to post-first-year training. Principles of operation of electric motors and of power factor correction equipment should also be given at a later stage.

**v distribution
crafts skills**

(Duration about 10 weeks)

aims To give an introduction to the basic skills used in distribution work.

content

<i>Process</i>	<i>Application of skills</i>
Removing of armouring and insulation of underground cables.	On steel tape and steel wire armoured cables and on plastic covered cables with concentric earth and neutral conductors.
Removal of sheathing of underground cables.	Removal of lead, PVC and aluminium sheaths.
Soldering and brazing.	On copper and aluminium conductors and brass sheet, using such accessories as cable lugs, ferrules and cable terminations. Will involve the use of liquefied petroleum gas and associated equipment.
Insulating of cable joints.	On two- and four-core MV straight-through joints.
Plumbing of lead and where relevant copper sleeves.	On MV straight-through and service joints and cable terminations.
Preparation and use of bitumen and epoxy-resin compounds.	On MV straight-through and service joints.

Mechanical and compression methods of conductor jointing and terminating.	On MV joints and terminations.
Handling, sampling and testing of electrical oils.	For use in transformers and switchgear.
Use and maintenance of electrical batteries and battery chargers.	Appreciation of theory and construction of acid and alkaline batteries and battery chargers normally used in substations.
Installation of emergency lighting systems.	Simple systems as used in major substations.
Testing of conductors, electrical equipment and electrical installations.	Use of continuity and insulating testing equipment, test lamps and phasing out devices.
Handling, erection and dressing of wood poles for overhead lines, making-off of stays.	Demonstrations and exercises concerned with wood poles. Use of pre-formed and conventional stays. Practice in working above ground level.
Running out, binding in and terminating of overhead line conductors.	Work on copper and aluminium conductors and on pin and tension type insulators.
Preparation of ropes, splices, and knots.	As associated with the movement of electrical equipment.
Handling, mounting, manoeuvring and fixing of electrical plant.	On ground and pole-mounted electrical plant and equipment.
Installation of services and terminal equipment to consumers' premises.	Overhead and underground services from distributor to cut-out. Operation of kilowatt-hour meter.
Bonding and earthing, on distribution systems. PME systems.	Bending and connecting of copper and aluminium strip for bonding and earthing. PME systems.

method This section is designed as an introduction to the work of jointers, linemen and electrical fitters and should be concerned with the erection and installation of conductors and equipment rather than with maintenance which will be the subject of training in later years. Work in this section will be mostly practical on dead equipment with lectures and extensive demonstrations.

vi electrical safety

(Duration about 1 week)

aims To ensure that apprentices have knowledge of safe working methods and practices to enable them to avoid accidents, and to give them training to cover the 'Introduction' section of recommendation 20, on the electrical training of apprentices to meet Factories Act requirements.

content As given in detail in recommendations 33, on basic safety training, and 20. (Introduction section only).

method Whilst it is recommended that basic safety is treated as an integral part of instruction, tuition under recommendation 20 should be given preferably as a single unit of training. If it is spread over a period it should take place in the later part of the first year of training.

vii further aspects of induction

(Duration about 3 days)

aims To complete the apprentice's induction to the industry by giving him a knowledge of the structure and aims of the industry and his own electricity board, by giving him an understanding of the basic principles of generation, transmission, distribution and utilisation of electricity and by making him aware of the relationship between the electricity board, the staff and the consumer.

content Organisation of electricity supply industry *
Organisation of electricity board *
Basic principles of generation, transmission and distribution of electricity *
Relations with consumers and the public *
Industrial hygiene
Lifting and handling
Firefighting and fire precautions
First aid

method *These subjects should be given by means of lectures, discussion and organised visits. Other subjects should be given by demonstration followed by participative exercises by the apprentices. All the subjects should where possible be treated as an integral part of the instruction.

viii tests and appraisals

(Duration 1 week)

aims	To ascertain the progress and levels of attainment made by individual apprentices during their formal training, and to provide, where necessary, remedial training.
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content	Practical tests Appraisals of progress
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method	Tests should be phased throughout the year by means of progressive test exercises, but some electricity boards may wish to formally set comprehensive practical tests near the end of the first year of training. In certain situations written tests may also be appropriate and in these cases short objective questions or questions of the multiple-choice type may be the most suitable.
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